

Lawrence Livermore National Laboratory

Nuclear Data for High Energy Ion Interactions and Secondary Particle Production: Session Intro



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Nuclear Data for High Energy Ion Interactions and Secondary Particle Production

- Chairs:

- Ken LaBel (KBR Wyle/SSAI)



- Michael Smith (ORNL)



- Ramona Vogt (LLNL/UC Davis)



Session Summary

The Galactic Cosmic Ray background covers a wide energy range, peaking at several hundred MeV/nucleon, but extending up to and beyond 10 GeV/nucleon. The interaction of these particles with spacecraft materials and occupants creates a large and complex cascade that presents challenges to modeling, especially in the absence of measured data covering the entire energy range. In this session we will identify the improvements required in all components of the nuclear data pipeline to enable safe space exploration.



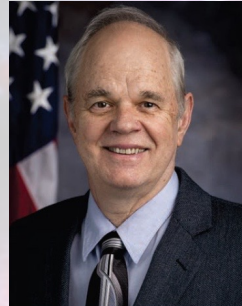
Session Schedule

- Technical introduction (20 m)
 - Francis Cucinotta (UNLV)
- Modeling (65 m)
- Databases (35 m)
- Break (15 m)
- Experimental facilities (50 m)
- Applications (45 m)
- Session Summary (5 m)

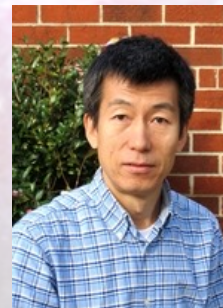


Modeling

- Physics-based modeling (25 m)
 - John Norbury (NASA)



- Code-based modeling (15 m)
 - Zi-Wei Lin (East Carolina University)



- Spacecraft-based modeling (15 m)
 - Insoo Jun (NASA)



- Panel Discussion (5 m)

Panelists: John Norbury, Zi-Wei Lin, Insoo Jun

Databases

- ESA/NASA/GSI database (15 m)
 - Francesca Luoni (GSI)
- US Nuclear Data Program databases (10 m)
 - David Brown (BNL/NNDC)
- Panel Discussion (10 m)
 - Panelists: Francesca Luoni, David Brown



Experimental Facilities

- US facilities - except RHIC (15 m)
 - Ken LaBel (KBR Wyle/SSAI)



- European facilities (15 m)
 - Anastasia Pesce (ESA)



- RHIC (8 m)
 - Daniel Cebra (UC Davis)



- Panel Discussion (12 m)
 - Panelists: Ken LaBel, Anastasia Pesce, Daniel Cebra, Larry Phair

Applications

- Introduction to applications (5 m)

- Semiconductors (15 m)
 - Robert Reed (Vanderbilt)



- Carbon ion therapy (10 m)
 - Nicholas Remmes (Mayo Clinic)



- Panel Discussion (15 m)
 - Panelists: Robert Reed, Nicholas Remmes, Reuben Garcia Alia (CERN), Larry Phair (LBNL)

Session goals and expectations

- Identify cross-cutting nuclear data needs, capabilities, expertise and approaches for space exploration
- Ask questions of our expert speakers and panelists
- Send session organizers comments that can be incorporated into the session summary slides presented on Friday
- Send session organizers any comments for the written WANDA report by next Friday, 11 March